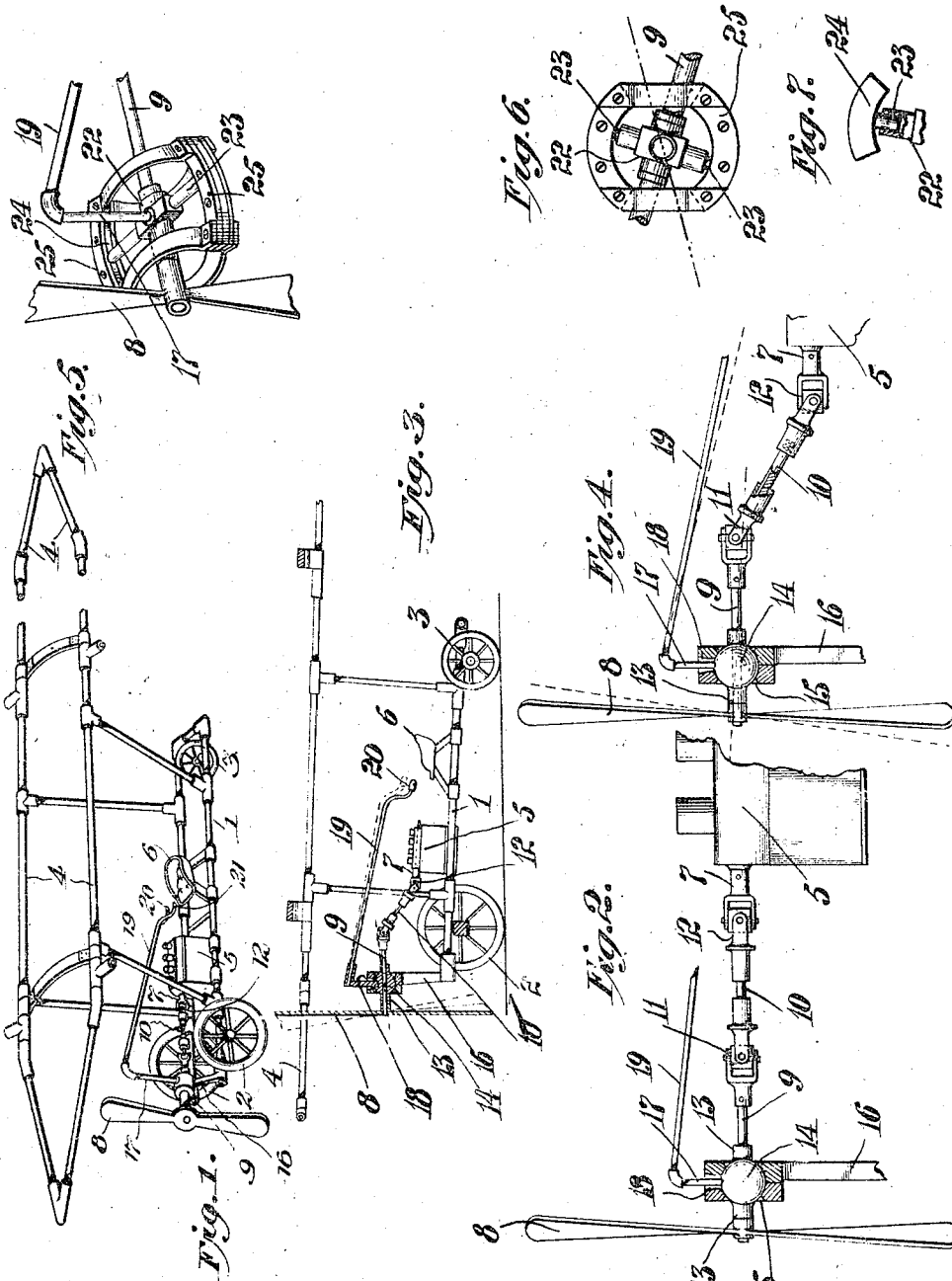


1,063,306.

Patented June 3, 1913.



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UNITED STATES PATENT OFFICE.

JOSEPH VOLPE, OF NEW YORK, N. Y.

AEROPLANE.

1,063,306.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed March 17, 1911. Serial No. 615,074.

To all whom it may concern:

Be it known that I, JOSEPH VOLPE, a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Aeroplanes, of which the following is a specification.

This invention relates to air-ships, particularly of the kind which are known as heavier-than-air machines.

The object of the invention is to provide, first, a machine of light as well as staunch construction, a secondly, a simplified number, distribution, and arrangement of operating parts therefor, severally designed and adapted to insure immediate response to the touch of the aviator and combining to give him the fullest control over the machine.

Reference is made to the accompanying drawings, in two sheets, for a detailed description of the invention.

In the said drawings, Figure 1 is a perspective view of a monoplane in which the preferred form of the invention is embodied.

Fig. 2 is an enlarged side view, partly broken and partly in section, showing the propelling and steering apparatus, combined in this invention. Fig. 3 shows a slightly modified form of the machine, in vertical longitudinal section. Fig. 4 is a view similar to Fig. 2, with the modification pertaining to Fig. 3. Fig. 5 is a partly-broken perspective view, illustrating a modified form of the combined propelling and steering mechanism. Fig. 6 is a partial plan of the construction illustrated in the preceding figure. Fig. 7 is a detail view of part of the same mechanism.

Corresponding numerals of reference designate similar elements throughout the various figures.

1 represents the truck-bed of the machine, which preferably is mounted on three wheels, two forward and one at the rear, respectively numbered 2 and 3. This bed consists mainly of rods disposed in narrow, elongate, quadrangular arrangement and firmly united by couplings and cross-braces, as best seen in Fig. 1. It carries a light, winged, similarly-built superstructure 4, intended to be covered with canvas or sail-cloth in the ordinary manner (not shown).

A motor or engine 5, of any suitable type, is placed upon the bed 1, at or near the forward part thereof; and the aviator's seat, 6, is located rearwardly of the same, con-

trary to usual practice. The driving-shaft 7, of the engine or motor is projected forwardly, in a plane coincident with that of the longitudinal axis of the aeroplane. This shaft commands the rotation of a screw-propeller 8, positioned at the extreme forward end of the machine. The propeller 8 is adapted to act also as a rudder, as previously intimated, so that it and the steering means and the motive power are all to be found ahead in full view of the aeronaut. The abovementioned, combined, propeller and rudder 8 has a rearwardly-projecting shaft 9, which is rotated from the aforesaid forwardly-projected shaft 7 of the motor, to which it is coupled by means of longitudinally-slidable, splined links 10 and universal joints 11, 12. The shaft 9 passes through an oscillatory cylindrical bearing 13, having a spherical portion 14, lodged in a correspondingly-shaped seat 15, within the upper end of a standard 16, that rises from the forward end of the truck-bed. A stem 17 projects upwardly from the sphere 14, passing out through a flaring opening 18 in the top of the standard 16, and to this stem is fastened a handle 19, which extends back above the coupled shafts 7 and 9 and the motor, down to a convenient point in front of the seat 6. The lower end of the handle is bifurcated, as at 20, 21, to enable the aviator to grasp and manipulate it with either hand. It will be understood that, owing to its connection with the partly cylindrical and partly spherical bearing of the shaft 9, the said handle operates to swing the rudder-propeller easily and instantly from one position to another, as may be required, and thereby insures perfect control over the movements of the air-craft in all directions. Similarly, the connection between the engine's driving-shaft 7 and the rudder-propeller's driven shaft 9 is such that the actuating mechanism of the aeroplane remains operative under all conditions, the interrelative adjustment of the links and shafting being universal.

The construction represented by Figs. 3 and 4 is substantially identical with that shown in Figs. 1 and 2, the chief difference being that the mounting or standard 16 is extended higher up in one case than in the other, and the elevated mounting requires that the shafts 7 and 9 be placed at different levels, with the interconnecting links set on an incline. The operation is the same in

either case. The principal advantage of the higher standard is that it brings the central part of the rudder-propeller into the direct line of vision of the operator, seated at 6, and may facilitate the reading if an index or a compass is employed.

Figs. 5, 6, and 7 show a form of bearing for the shaft 9, which may be substituted for and will answer practically the same purpose as that hereinbefore described. The latter-named form of bearing, indicated by the numeral 22, is cruciform in design, and the transverse arms or members thereof are hung loosely upon pivot-pins 23, that project inwardly from segmental or arc-shaped shoes 24, which latter are adapted to slide back and forth in suitable ways provided therefor within the oppositely curved sides of a truncated circular frame 25. The shaft 9 of the rudder-propeller passes endwise through the truncated frame and is guided in its oscillations by the several curves thereof, the frame being secured in place upon the upper end of the standard or mounting 16. The oscillations of the shaft are produced and varied by swinging its cruciform bearing in a vertical plane upon the pivots 23 and reciprocating the pivot-carrying shoes circularly in a horizontal plane. The handle 19, through its stem 17, is attached to and operates the cruciform bearing 22 in like manner as obtains with the cylindrical-spherical bearing 13-14.

What I claim, and desire to secure by Letters Patent of the United States, is:—

1. An aeroplane including a gliding structure, an aviator's seat thereon, a bearing element universally mounted at a point in advance of the aviator's seat, a propeller, a longitudinal shaft carrying said propeller and journaled in the bearing element normally coincident with the longitudinal axis of the gliding structure, a motor arranged at a point between the aviator's seat and the bearing element, a transmission shaft composed of slidably connected sections and universally jointed to the propeller shaft and motor shaft and a rigid controlling device directly fixed to said bearing element and extending longitudinally therefrom to a position in proximity to the aviator's seat,

whereby said bearing element may be directly and positively adjusted.

2. An aeroplane including a gliding structure, an aviator's seat thereon, a bearing element universally mounted at a point in advance of the aviator's seat, a propeller, a longitudinal shaft carrying said propeller and journaled in the bearing element coincident with the longitudinal axis of the gliding structure, a motor arranged at a point between the aviator's seat and the bearing element and having its shaft arranged in a plane below the normal horizontal plane of the propeller shaft, a normally inclined transmission shaft composed of slidably connected sections and universally jointed to the propeller shaft and motor shaft and a rigid controlling device directly fixed to said bearing element and extending longitudinally therefrom to a position in proximity to the aviator's seat, whereby said bearing element may be directly and positively adjusted.

3. An aeroplane including a gliding structure, an aviator's seat mounted thereon, a spherical element universally supported upon the gliding structure at a point in advance of the aviator's seat, a longitudinal propeller shaft journaled in and extending through said spherical element and normally arranged horizontally and coincident with the longitudinal axis of the gliding structure, a propeller upon the forward end of said shaft, a motor arranged at a point between the aviator's seat and spherical element, a transmission shaft composed of slidably connected elements universally jointed to the motor shaft and rear end of the propeller shaft, and a rigid controlling device directly fixed to said bearing element and extending longitudinally therefrom to a position in proximity to the aviator's seat, whereby said bearing element may be directly and positively adjusted.

Signed at New York city, in the county of New York and State of New York, this 15th day of March, A. D. 1911.

JOSEPH VOLPE [L. s.]

Witnesses:

A. H. STE. MARIE,
M. B. MEEHAN.